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COUNTRY East Germany

REPORT

SUBJECT Heinrich Hertz Institute: 1956 Annual
Short Report on Research in Measurements
of Solar Noise in Various Ranges

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"Measurement of Solar Noise at 20 cm"

1. During 1956, one more 20-centimeter receiving unit was put into operation. With this unit, which is equipped with a 4-meter parabolic mirror, measurements of solar noise parallel to the existing 20-centimeter unit were made. The object was to determine whether the slight variations which occurred were of a real nature or should be attributed to the apparatus.
2. In order to minimize errors caused by amplification changes during the measurements, the measuring procedure was altered. The noise generator was adjusted in such a way that it had a defined power of approximately the same magnitude of the antenna power. The result of this was that the recorded curve on the recording device at the end of the lock-in amplifier remained in the vicinity of the zero-line. This procedure has still another advantage: formerly the entire scanning range could not be utilized for daily recordings because the recording devices went beyond the measuring range when solar eruptions (Sonnenausbrueche) occurred; since the recording curve now remains in the vicinity of the zero-line, sufficient room is now available in most cases for recording bursts while completely exploiting the scanning range. In order to obtain an exactly defined constant noise power from the noise generator, a special power-supply unit (Netzgeraet) was developed.

"Measurement of Solar Noise at 3.2 cm"

3. One more receiving unit was also put into operation for the 3.2 centimeter wave length. Here a new switch was developed which makes possible the recording of calibrations in reversed antenna power. This is advantageous as antenna and noise generator energy can have the same magnitude without

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limiting the usable recorder scanning range. In addition, the measuring procedure described for the 20-centimeter range was used here for solar recordings.

4. The results of the daily measurements have been published since the beginning of 1956 in the Observation Results of Heinrich Hertz Institute (Beobachtungsergebnisse des Heinrich-Hertz-Institutes). Because 1956 fell shortly before the solar spot maximum, an increasing tendency of the daily measured values and of the frequency of burst phenomena was noticeable. The unusually large solar eruption of 31 August 1956 was recorded at both frequencies.

"Measurement and Localization of Cosmic Noise in the Decimeter Range"

5. During 1956, work on the construction of one receiver for solar radiation measurement at 10 centimeters and one at 15 centimeters was begun; these are to be used during the International Geophysical Year. In late 1956, the 10-centimeter unit was nearly completed and the 15-centimeter unit was still in the workshop.
6. For research on local radiation sources on the sun in shortwaves and on localizing radiation sources in general, a 36-meter parabolic mirror is being constructed. This mirror is assembled so as to rotate on two steel supports around an east-west axis, making scanning of the entire visible heavens possible by means of the antenna lobe. A short-term accompanying rotation of the antenna lobe is made possible by a rotating exciter antenna. At the end of 1956, all individual parts of the installation were completed, and the supporting towers and first parts of the mirror were assembled.

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